In The Claims

Applicant submits below a complete listing of the current claims, with any insertions indicated by underlining and any deletions indicated by strikeouts and/or double bracketing.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims

1. (Previously presented) A TFA image sensor with stability-optimized photodiode for converting electromagnetic radiation into an intensity-dependent photocurrent with an intermetal dielectric, on which, in the region of the pixel matrix, a lower barrier layer is situated and a conductive layer is situated on said barrier layer, and vias being provided for the contact connection to the ASIC, said vias ending in metal contacts on the ASIC, wherein an intrinsic absorption layer is provided between the TCO layer and the barrier layerwith a layer thickness of between 300 nm and 600 nm.

2. (Previously presented) The TFA image sensor as claimed in claim 1, wherein the layer thickness of the intrinsic absorption layer is approximately 450 nm.

3. (Previously presented) The TFA image sensor as claimed in claim 1, wherein the band gap of the intrinsic absorption layer of the photodiode is increased.

4. (Previously presented) The TFA image sensor as claimed in claim 1, wherein the increase in the band gap is realized by using an amorphous silicon-carbon alloy (a-Sic:H) as absorption layer.

5. (Previously presented) The TFA image sensor as claimed in claim 1, wherein, in particular, the photodiode of reduced layer thickness is arranged on a surface that is as planar as possible.

6. (Previously presented) The TFA image sensor as claimed in claim 1, wherein the photodiode with small intrinsic layer thickness is deposited on an ASIC having a flat surface topography.

7. (Previously presented) The TFA image sensor as claimed in claim 1, wherein the ASIC is coated with a passivation.

8. (Previously presented) The TFA image sensor as claimed in claim 1, wherein, within the pixel matrix, firstly the back electrodes of all the pixels are connected to one another via the topmost CMOS metal plane, which is made planar in the region of the pixel matrix.

9. (Previously presented) The TFA image sensor as claimed in claim 8, wherein the metal plane is situated on a CMP-planarized surface (CMP = Chemical Mechanical Polishing) of the topmost intermetal dielectric layer.

10. (Previously presented) A method for fabricating a TFA image sensor as claimed in claim 1, wherein, before the application of the photodiodes, the topmost, comparatively thick metal layer of the ASIC is removed and replaced by a matrix of thin metal electrodes which form the back electrodes of the photodiodes, said matrix being patterned in the pixel raster.

11. (Previously presented) The method as claimed in claim 10, wherein an antireflection layer that is present and the metal layer are completely removed above the pixel matrix, so that all that remains is the barrier layer situated underneath.

12. (Previously presented) The method as claimed in claim 10, wherein the lower barrier layer is completely removed, this then being followed by the deposition and patterning of the further metal layer in the form of pixel back electrodes.

13. (Previously presented) The method as claimed in claim 10, wherein the ASIC passivation is opened in the photoactive region of the TFA sensor.

14. (Currently amended) The method as claimed in claim 10, wherein the antireflection layer of the upper ~~metalization~~ metallization layer of the ASIC in the photoactive region of the TFA sensor is removed.

15. (Previously presented) The method as claimed in claim 10, wherein the conductive layer of the upper metallization layer of the ASIC in the photoactive region of the TFA sensor is removed.

16. (Currently amended) The method as claimed in ~~one of claims 10 to 15~~ claim 10, wherein the lower barrier layer of the upper metallization layer of the ASIC in the photoactive region of the TFA sensor is patterned or removed.

17. (Currently amended) The method as claimed in ~~one of claims 10 to 16~~ claim 16, wherein a further metal layer is deposited and patterned.

18. (Currently amended) The method as claimed in ~~one of claims 10 to 17~~ claim 17, wherein further layers, such as color filter layers, are deposited and patterned.

19. (Previously presented) A method for fabricating a TFA image sensor as claimed in claim 1, wherein

the ASIC passivation in the photoactive region of the TFA sensor is opened,

the antireflection layer of the upper metallization layer of the ASIC in the photoactive region of the TFA sensor is removed,

the conductive layer of the upper metallization layer of the ASIC in the photoactive region of the TFA sensor is removed,

the lower barrier layer of the upper metallization layer of the ASIC in the photoactive region of the TFA sensor is patterned or removed,

a further metal layer is deposited and patterned,

the photodiode layers are deposited and patterned, and

further layers, such as color filter layers, are deposited and patterned.